

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

REC'D 13 APR 2004

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Applicant's or agent's file reference P-PWU-477/MO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP 03/00661	International filing date (day/month/year) 23.01.2003	Priority date (day/month/year) 23.01.2002
International Patent Classification (IPC) or both national classification and IPC G01F1/66		
Applicant PAUL WURTH S.A. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 28.07.2003	Date of completion of this report 08.04.2004
Name and mailing address of the International preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Papantoniou, E Telephone No. +49 89 2399-2468 

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/EP 03/00661**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-9 as originally filed

Claims, Numbers

1-14 as originally filed

Drawings, Sheets

1/1 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1 - 14
	No: Claims	
Inventive step (IS)	Yes: Claims	1 - 14
	No: Claims	
Industrial applicability (IA)	Yes: Claims	1 - 14
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Reference is made to the following document:

D1: BENES P ET AL: "New design of the two-phase flowmeters" SENSORS AND ACTUATORS A, ELSEVIER SEQUOIA S.A., LAUSANNE, CH, vol. 86, no. 3, 15 November 2000 (2000-11-15), pages 220-225, XP004224554 ISSN: 0924-4247

2. Closest prior art is D1, which discloses a method/device for monitoring the mass flow of particulate flow. D1 teaches that for monitoring the mass flow, an acoustic detection can be achieved, by connecting an acoustic sensor (S, D1) to an impact body having the shape of a partition plate, or rod (see Fig. 1, and page 222, section 3.1, D1). The impact body is positioned perpendicular to the flow. Particles falling on the impact body create pressure deformation waves on the body, which is used as a wave guide producing an acoustic emission, detected by the sensor. D1 also teaches that in case of flow velocity measurements, the particles can fall directly on the sensor (see Fig. 5 and section 3.3 of D1).

Problem with the method/device of D1 is that because of the shape and positioning of the impact body, only a small section of the particulate flow falls on the impact body, and thus it is not possible to provide a homogeneous coverage of the whole cross section of the pipeline. Therefore the measurement is not accurate.

Object of the present invention is to improve the accuracy of the mass flow meter of D1, so that a homogeneous measurement of the flow can be performed.

The present invention solves this problem by providing the impact body which is "axially arranged" inside the pipeline, and the jet "impacts onto a frontal surface of said impact body with substantially its whole cross-section". Since with such arrangement of the impact body, the front side area of the impact body corresponds to the jet flow cross area, a homogeneous measurement is provided.

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International application No. PCT/EP03/00661

None of the search documents show an impact body, positioned parallel to the inlet flow, and having a frontal area corresponding to the "whole cross-section" of the solid/gas jet, as defined in independant claims 1 and 7.

Thus the subject matter of independant claims 1 and 7 is new and inventive over the searched prior art and satisfies the criterion set forth in Article 33 PCT.

3. Claims 2 - 6 and 8 - 14 are dependent on claims 1 and 7 and as such also meet the requirements of the PCT with respect to novelty and inventive step.